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(54) Title: MODIFIED NUCLEOTIDES

(57) Abstract: The invention provides modified nucleotide or nucleoside molecule comprising a purine or pyrimidine base and a ribose or deoxyribose sugar moiety having a removable 3'-OH blocking group covalently attached thereto, such that the 3' carbon atom has attached a group of the structure -O-Z wherein Z is any of -C(R')<sub>2</sub>-O-R", -C(R')<sub>2</sub>-N(R")<sub>2</sub>, -C(R')<sub>2</sub>-N(H)R", -C(R')<sub>2</sub>-S-R" and -C(R')<sub>2</sub>-F, wherein each R' is or is part of a removable protecting group; each R' is independently a hydrogen atom, an alkyl, substituted alkyl, arylalkyl, alkenyl, alkynyl, aryl, heteroaryl, heterocyclic, acyl, cyano, alkoxy, aryloxy, heteroaryloxy or amido group, or a detectable label attached through a linking group; or (R')<sub>2</sub> represents an alkylidene group of formula =C(R''')<sub>2</sub> wherein each R''' may be the same or different and is selected from the group comprising hydrogen and halogen atoms and alkyl groups; and wherein said molecule may be reacted to yield an intermediate in which each R" is exchanged for H or, where Z is -C(R')<sub>2</sub>-F, the F is exchanged for OH, SH or NH<sub>2</sub>, preferably OH, which intermediate dissociates under aqueous conditions to afford a molecule with a free 3'OH; with the proviso that where Z is -C(R')<sub>2</sub>-S-R", both R' groups are not H.